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WHAT HAVE WE LEARNED ABOUT LAND MARKET IN SLOVAKIA?

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Abstract: The well-functioning of the land market represents a decisive factor in the forming of development of agriculture and has a significant influence on the structural changes. The paper provided an analysis of the land market with the aim to point to the recent situation and give an overview of the development of this sector. The study highlights changes occurred mainly between the years 2007 until 2017 in Slovakia, based on the data obtained from the national and the international databases. The analyses were focused particularly on the structure and using the land. It covered the area of the land production, gave an overview of the agriculture land and renting prices in Slovakia in comparison with the other European Union countries.

Keywords: land market, land use changes, market structure, agriculture land prices, renting prices

JEL Classification: Q1, Q15

INTRODUCTION

Agricultural and forest land is the major component of environmental and natural resources. It is still a scarce production factor and its preservation is essential to ensure prosperity, national wealth, production of food and, what is the most important, long-term sustainability of landscape (Blaas, et al. 2010). The agrarian sector links the production factors as a land, labour and capital in many ways and combinations. Land is essential natural and economic source of agriculture and its value reflects its specific features, such as immobility, limitedness, and abrasion (Lazikova and Takac, 2011). Palkovic et al. (2014) point out that during the last years, these characteristics have become more and more visible. The higher proportion of land is used for construction purposes, the lower is the proportion of agricultural land. Therefore, increase in the production with the use of existing inputs is crucial and essential. At the end of the last century, the development of agricultural sector in Slovakia went through the process of transformation. These changes have had extraordinary impact not just on the forms of land ownership, agricultural production, the ways of land use but also on the way of thinking. The state agricultural policy had to adapt to trends and provisions of the European Union and globalisation process. The objective of this paper is to present the current situation and to provide an overview of agricultural land development, structure, land use, agricultural land prices and rental prices, in the last 10 years. The analysis is based on the data obtained from the database of the Statistical Office of the Slovak Republic, Cartography and Cadastre Authority of Slovak Republic, Research Institute of Agriculture and Food Economics, Eurostat, The Farm Accountancy Data Network (FADN) and FAOstat.

1. LAND STRUCTURE AND LAND USE

The natural and economic potential of Slovakia, as well as the living level of population may have significant impact on the land-use. From the total area of more than 49 000 km², almost half of the capacity is currently covered by agricultural land (49%). The agricultural activities play an important role in maintaining the sustainability and conservation of the rural environment and landscape. Arable land constitutes approximately 71% (1 408 thousand ha) of agricultural land

and permanent grassland represents 28% (853 thousand ha). On the other side, forests constitute about 41% (2 024 thousand ha) of the total land area and the composition of the total land area showing the partial areas is illustrated by Table1.

The distribution of land is significantly affected by natural conditions, climate change or altitude. The actual distribution of agricultural land in the regions of Slovakia should not be significantly altered in the future, even if it is assumed to be ongoing trend of the decrease of agricultural plots (Nemethova, 2012). In 2017, the land use has changed mainly due to agricultural and economic influence compared to 2008. Over the observed period, the arable land decreased by 13 231 ha (almost 1%). The most significant decrease was noticed in the case of orchards (-3,67%) and vineyards (-4,04%). Contrariwise, the built-up areas and the other areas increased in their share the most.

There was a slight decrease also in the share of agricultural land per person. It fell from 0.4497 ha per capita (of which arable land represented 0.264 ha per capita) in 2007 to 0.4376 ha per capita (of which arable land constituted 0.2588 ha per capita) ha in 2017. Generally, the continuing decline of agricultural and arable land per capita is often cited as an indicator of impending problems. The reason for such problems is often perceived to be an urbanization, industrialization or an increasing demand for agricultural products and commodities facing limited natural resources such as land, or water (Bruinsma, 2009).

Tab. 1: Changes in land use structure in Slovakia, 2008- 2017, (%)

Land use category	2008		2017		(%) change
	ha	%	ha	%	2008-2017
arable land	1 421 890,96	29,00	1 408 659,76	28,73	-0,93
permanent grassland	879 800,09	17,94	853 756,69	17,41	-2,96
gardens	76 635,87	1,56	76 111,07	1,55	-0,68
vineyard	27 257,54	0,56	26 257,60	0,54	-3,67
orchards	17 360,22	0,35	16 658,31	0,34	-4,04
hop-gardens	519,57	0,01	509,94	0,01	-1,85
forest land	2 008 257,49	40,95	2 024 374,20	41,28	0,80
built-up areas	229 058,77	4,67	236 979,11	4,83	3,46
other areas	148 334,73	3,02	164 858,08	3,36	11,14
water area	94 575,15	1,93	95 255,62	1,94	0,72
Total area	4 903 690,37	100%	4 903 420,37	100%	-

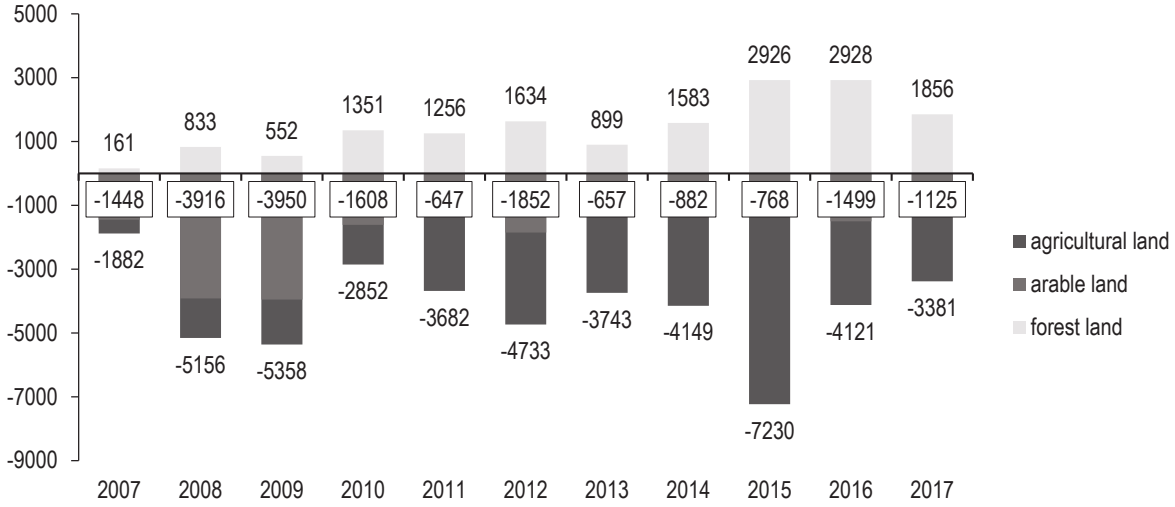
Source: Source: Statistical Office of the Slovak Republic, own calculations

Urbanisation, reforestation and another artificial land changes belong to the main factors threatening the agricultural land. According to the EEA (European Environmental Area), in the EU 78% of areas uptaken by urbanisation and artificial land, comes from agricultural land i.e. arable land, permanent grasslands and pastures or other agricultural areas. As stated by Blaas, et al. (2010), the economic development of the country makes a pressure on land use changes. These changes may occur in two main ways: in a way of decrease in agricultural land and in a way of increase in forest soil cover.

These statements are supported also by data in the Figure 1. As shown in the Figure 1, the annual changes in agricultural, arable and forest land in Slovakia. In 2017, the decline of agricultural land (-3 381 ha) was lower by 740 ha than in the year 2016 (-4 121 ha). However, in 2015 the fall in agricultural areas was the most significant (-7 230 ha) compensated by an increase of forest lands, non-agricultural and non-forest land. The most significant year-on-year increase in forest areas was recorded from 2015 to 2017. On the other side, the decrease in the agricultural area in relative terms has been predominantly driven by the afforestation, extensive investment construction of industrial buildings and housing construction. From 2007 to 2017, due to the constructions, the agricultural land dropped in total by 19 394 hectares and by contrast, mainly due to afforestation of agricultural land

the forest area increased by 15 797 hectares. Under the construction, we understand the industrial construction, civil and housing construction, agriculture construction, waterworks and other investment purposes.

Fig. 1 Annual changes in the agriculture, arable and forest land in Slovakia, 2007-2017, (ha)



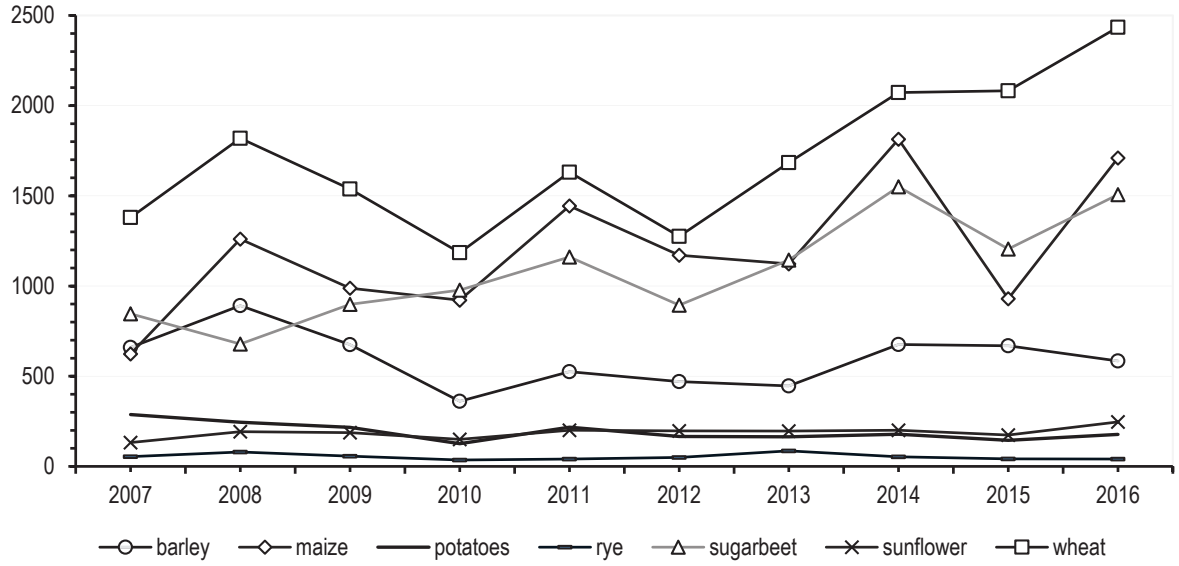
Source: Statistical Yearbook of Geodesy, Cartography and Cadastre Authority of Slovak Republic

Micurova (2002) notes, that the way of using agriculture land is considered as one of the factors of agricultural policy implementation. Using agricultural land in full extent indicates that the agricultural sector creates stable conditions and sufficient incomes, which support businesses in this area and the efficient utilisation of available natural resources. By contrast, the negative trend causes, traditional farming does not generate sufficient income to motivate businesses to grow. In 2017, from the total area of 2 381 thousand hectares of agricultural land about 471 thousand ha (19,8%) was neglected or unused for some other reasons. Although this negative phenomenon persisted in long-term, currently, its range is reduced slightly compared to 2007. Those times, more than 502 thousand ha out of 2 433 thousand ha of agriculture land was unused. Blaas et al. (2010) argues that other reason is a relatively low level of enforceability of law on the protection and use of agriculture land, as well as inadequate support policy of the state to change the use of these soils (bioenergy, afforestation, recreational purposes).

2. LAND PRODUCTIVITY

The structure and size of land area are essential preconditions for the level of agricultural crop production. Availability of arable land has a huge influence on plant production as well as consumption and other macroeconomic indicators. Crop production is linked to the harvested production (expressed in tonnes), yield per hectare (expressed in tonnes/hectare) and areas under cultivation (expressed in hectares). Comparing the years 2007 and 2016, the production of barley decreased by 11% (to 584.6 thousand t), potatoes by 38% (to 177.2 thousand t) and rye by 24% (to 41.1 thousand t). By contrast, sugar beet production increased by 78% (to 1506.9 thousand t), sunflower by 85% (to 246.5 thousand t) wheat by 76% (to 2434.2 thousand t) and the highest increase occurred in the production of maize by 174% (to 1710.2 thousand t) compared to 2007.

Fig. 2 Production of the main crops on arable land in Slovakia 2007-2016



Source: FAOSTAT

Note: in thousand tonnes

The share of cereals area accounted for almost 55% of the total utilized agricultural land. Wheat, barley and maize are the main cereals grown in Slovakia. Cereal production has significantly fluctuated over the observed period. For example, after the increase in 2008 (to 1819,5 thousand t), wheat production fell between 2008 and 2010 (by 34%) and from 2012 to 2016 almost doubled. Similar pattern was observed also in case of other cereals (Fig.2).

In 2016, the largest harvested area was used for wheat (416.58 thousand ha), followed by maize (184.81 thousand ha) and barley (114.97 thousand ha). Other main crops produced in Slovakia are presented in the Tab.2. Between the years 2007-2016, the highest growth of yields per hectare can be seen in maize production, increasing by 133%, (to 9.25 t/ha in 2016), barley by 62 % (to 5.08 t/ha in 2016) and sugar beet by 56% (to 70.15 t/ha in 2016).

Tab. 2: The Harvested area and Yields of the main crops cultivated in Slovakia

	2007		2008		2010		2012		2014		2016	
	ha	yld	ha	yld	ha	yld	ha	yld	ha	yld	ha	yld
barley	209.93	3.14	213.05	4.18	133.01	2.72	147.99	3.18	138.83	4.87	114.97	5.08
maize	157.26	3.97	154.24	8.17	166.59	5.53	212.34	5.51	216.19	8.39	184.81	9.25
potatoes	17.77	16.19	14.27	17.19	10.99	11.45	8.93	18.54	9.11	19.64	8.26	21.46
rye	20.68	2.63	25.94	3.10	15.90	2.23	15.72	3.14	14.59	3.67	11.73	3.51
sugar beet	18.86	44.89	11.12	61.06	17.93	54.52	19.74	45.31	22.21	69.79	21.48	70.15
sunflower	64.75	2.05	74.93	2.57	82.87	1.81	90.12	2.19	76.59	2.62	83.79	2.94
wheat	360.70	3.82	373.66	4.87	342.12	3.46	388.15	3.29	379.28	5.46	416.58	5.84

Source: FAOSTAT

Note: ha: harvested areas – in thousand hectares, yld: returns per hectare (yields) - in tonnes per hectare

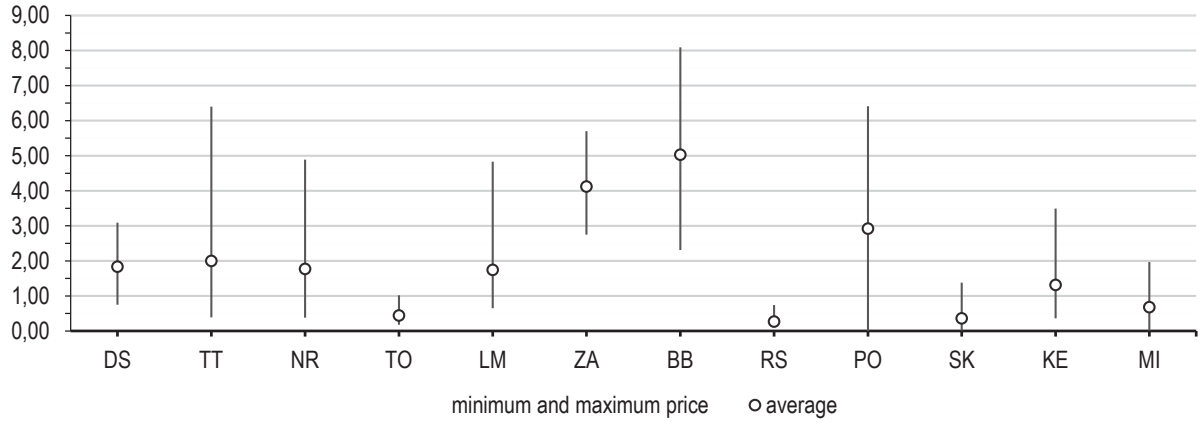
3. AGRICULTURAL LAND PRICES AND RENTS

The prices of agricultural land and rents reflect the existing market structure, the political and socio-economic development in the region. They play an important role in shaping the balanced economy and developing the production potential of agricultural farms and enterprises. Empirical literature has identified number of factors affecting land market and land prices. Those are location (Snyder et al.,

2007), size of the area, distance to large cities (Huang et al.,2006; Dirgasova et al., 2017), quality of land (Pyykkonen et al., 2005), demand and supply (Bandlerova 2011), population, farm income, credit availability (Devadoss and Manchu, 2007), fragmented land ownership (Schwarcz et al., 2013; Buday, 2015), increasing housing demand (Swinnen et al., 2009) the purpose of further utilisation (Buday, 2011) and other political, environmental, social, geographic or economic factors. Ciaian (2014) underlined that the type of support policy and an unequal amount of subsidies for agriculture in the individual EU Member States in a large-scale influence the development of the market. The amount of payment per hectare, which is different for each country, causes a pressure on the growth of land prices.

Market prices are often affected by other determinants coming from outside the agricultural sector and prices might vary significantly in each region. The development of the average market price of agricultural land in the years 2007–2015 showed a fluctuating trend. Buday et al. (2015) studied the annual average market price for the twelve regions in Slovakia. The prices reached the value of 2,20 Euro/m2 in 2007 and 3,17 Euro/m2 in 2008, which was the maximum value in the monitored years. Contrariwise, the lowest price (0,96 Euro/m2) was recorded in 2014. In the last observed year 2015, the average price reached the value of 1,61 Euro/m2. According to the division of districts (Fig. 3), the highest average market price of agricultural land was found in Banska Bystrica 5,03 Euro/m2, with a slightly lower value followed by Zilina district (4,12 Euro/m2) and Poprad (2,92 Euro/m2). Between the regions with the lowest average prices of agricultural land there belong Topolčany, Rimavska Sobota and Svidnik.

Figure 3 Regional differences in land prices in selected districts of Slovakia between 2007-2015

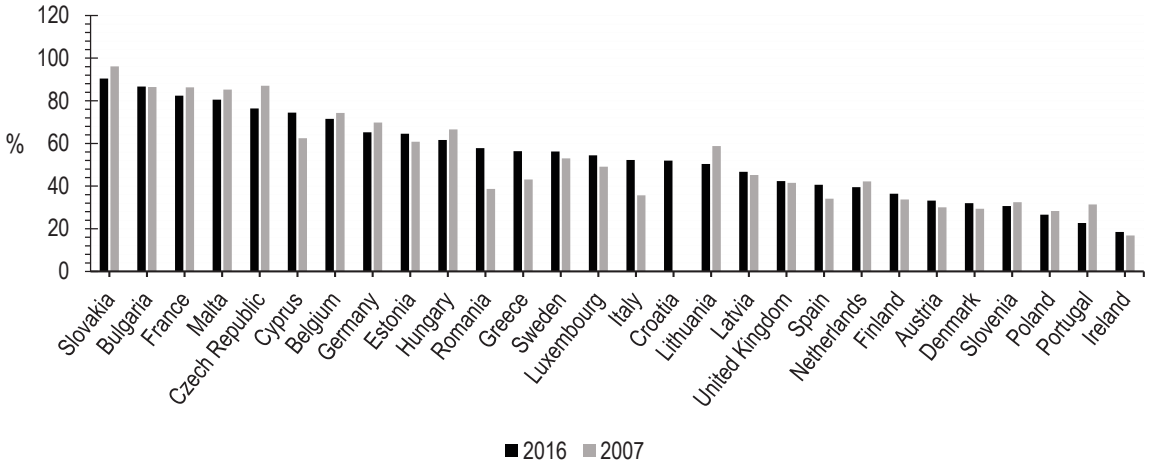


Source: Research Institute of Agriculture and Food Economics

Note: DS – Dunajska Streda, TT- Trnava, NR- Nitra, TO- Topolcany, LM- Liptovsky Mikulas, ZA- Zilina, BB- Banska Bystrica, RS- Rimavska Sobota, PO- Poprad, SK- Svidnik, KE- Kosice, MI- Michalovce

Particular feature of the Slovak agriculture is a high share of rented land. The privatization in the past has led to complex problems with land ownership, land owners are mainly citizens, the state, in limited extent municipalities and companies and organisations who lease more than ¾ of agricultural land. Lazikova and Takac (2011) described many obstacles for sale or purchase of agricultural land, such as the bureaucracy, the lack of information on land ownership, the excessive land fragmentation, and difficulties to stipulate the land price. This caused that land lease prevails over the purchasing process despite the interest in buying agricultural land.

Figure 4 Share of rented land in EU countries in 2007 and 2016



Source: FADN, own calculations

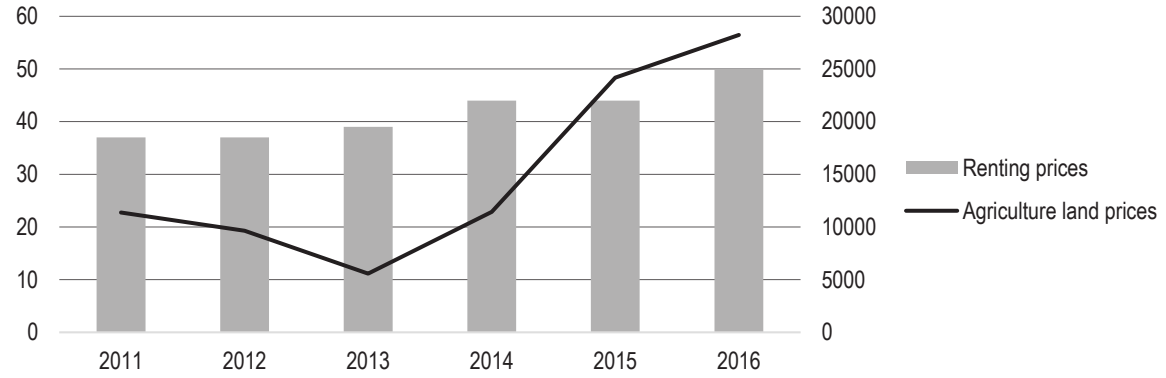
Notes: % share of the rented utilised agricultural area (U.A.A.) on total U.A.A.

There are significant country differences in the field of rental land market. Figure 4 shows the aggregate indicators of the importance of renting (rented UAA) as a share of total utilised agricultural area in the years 2016 and 2007. The variations between EU states are huge in both periods. Ireland (16.8%) and Portugal (31.41%) are the countries with the least rented area in 2016, in comparison with Bulgaria (86.6%) and Slovakia (90.5%) on the other side. In the case of Slovakia, the share of rented land decreased by 6% compared to 2007. As the data from Figure 4 indicate, the renting might be an important part of modern agriculture systems. One of the main benefits of rental instead of sales transactions is that, in a capital-intensive production system, and with the possibility of using other assets as collateral, farms prefer to invest in new technology and farm-specific assets rather than tie up large sums of capital in land purchases (Ciaian et al., 2012).

The Figure 5 shows the development of agricultural land prices and renting prices between 2011-2016. Based on the data from the Eurostat database, we observe huge difference in the development of land prices and renting prices in Slovakia. Selling prices fell between 2011 and 2013 (by almost 50%) and in the following years increased sharply to 24 175 Euro/ha in 2015 and 28 217 Euro/ha in 2016. The development of renting prices shows the upward trend in the observed time period. From the average price per hectare in 2011 (37 Euro) they increased by 35% (to 50 Euro).

Generally, the highest renting prices of arable land are paid in the south-west of Slovakia. In 2016, the average annual price reached 85 Euro/ha in western Slovakia while in central Slovakia it was 31 Euro/ha and 38 Euro/ha in the eastern Slovakia.

Fig. 5 Agricultural land and renting prices in Slovakia - arable land and permanent grassland (Euro/ha)



Source: Eurostat

Compared to the other European countries for which data of land rents are available in 2016, Slovakia (50 Euro/ha) together with Lithuania has in average the lowest rents (46 Euro/ha) while the highest renting prices are found in Netherland (791 Euro/ha) and in Austria (348 Euro/ha).

CONCLUSION

The article provided an overview of developments and current circumstances in the land market of Slovakia. The purpose of the paper was to map and analyse the changes in this sector between the years 2007 to 2017. The analysis was based on the data obtained from national and international databases.

Firstly, we focused on the analyses of land structure and land use changes. The share of agricultural and arable land tended to decline gradually in the recent years with slight reduction in the area of hop gardens, permanent grassland, gardens and arable land and vineyards and orchards were recorded the highest decline. The urbanisation, reforestation, extensive housing and investment construction have affected the decline in agriculture land area the most. The largest decrease of agricultural land was recorded in 2009.

Since the structure and size of the land are essential preconditions for the level of agricultural crop production and the availability of arable land has a large influence on plant production as well as the consumption or the others macroeconomic indicators, we analysed the land production together with the harvested production, yield per hectare and areas under cultivation. The share of cereals area accounted for almost 55% of the total utilized agricultural land while wheat, barley and maize are the main cereals grown in Slovakia.

In the last part, we compared the developments of agricultural land prices and rents. Market prices are often affected by exogenous factors coming from the outside of the agriculture sector and differing significantly in each region. In the selected twelve districts of Slovakia, analysed by Buday et al. (2015), the average market price of agricultural land reached 1,90 Euro/m2 during the years 2007-2015 and the highest prices of agricultural land were found in the Banská Bystrica, followed by Zilina district and Poprad.

When analysing rental market in the EU for the years 2007 and 2016, the share of rented area in the total UAA differed considerably in different member states. In 2016, Slovakia ranked among the states with the highest proportion of rented land followed by Bulgaria.

Generally, the most expensive arable land for rent is located in the south-west of Slovakia. In 2016, the average annual price reached 85 Euro/ha in western Slovakia while in the central regions it was 31 Euro/ha and for eastern Slovakia, 38 Euro/ha. Compared to the other EU countries, Slovakia and Lithuania were ranked between the countries with the lowest average rents paid for agricultural land contrariwise the most expensive renting prices were found in Netherlands and Australia.

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